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10/024,402	12/18/2001	Michael John Maytum	693-04-PA	5301

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EXAMINER

LAXTON, GARY L

ART UNIT

PAPER NUMBER

2838

DATE MAILED: 07/10/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/024,402

Applicant(s)

MAYTUM ET AL.

Examiner

Gary L. Laxton

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains.

Providing a title for the abstract is unnecessary and should be removed.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the gate of the SCR of claims 11 and 20 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

According to the specification the SCR is represented by the combination of two bipolar transistors TR1, TR2, therefore, it is unclear what the applicant considers the gate of the SCR.

Claim Objections

3. Claims 14 and 20 are objected to because of the following informalities:

Claim 14 appears to be erroneously dependent upon claim 12.

Claim 14 lacks antecedent basis from claim 12. It appears claim 14 should be depend from claim 13.

Claim 20 line 8 "the gat" [sic] "of the SCR".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 11-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 11, 20 and 21 recite the SCR as having a gate. However, according to the specification the SCR is represented by the combination of two bipolar transistors TR1, TR2, therefore, it is unclear what the applicant considers the gate of the SCR. For examination purposes both gates of the transistors making up the SCR are considered the gate(s) of the SCR. Claims 12-19, 23-27 inherit the same through dependency.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claim 1-6 and 8-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Avery (US 4,484,244).

Concerning claims 1-4, an overvoltage protection circuit (figure 2), the circuit comprising: a first switching means (10 and 12) for connecting a conductor (14) to a reference potential (16); and a first trigger means (20, 22) operable to switch switching means from a first, OFF state to a second, ON state (10 or 12); wherein said first trigger means is triggered by voltages exceeding a first magnitude (col. 2 line 43) on said conductor and triggered by voltages exceeding a second magnitude (col. 2 line 55) on the conductor, thereby to provide overvoltage protection at two discrete voltage magnitudes (col. 2 lines 60-70, col. 3 lines 20-70). And wherein the first trigger means comprises a current/voltage trigger element (20) for switching the first switching means when the voltage on said conductor exceeds a second magnitude (col. 2 lines 60-70, col. 3 lines 20-70) .

Concerning claim 5, the current trigger element (20) is operable to generate a trigger signal in dependence on the current flowing through the conductor (14), thereby to trigger conduction of the switching means (10 and 12) in response to the current exceeding a pre-selected value (col. 3 lines 65-70 and col. 4 lines 1-15).

Concerning claims 6 and 8, wherein the current trigger element is connectable in series with the

conductor and wherein the current trigger element comprises a resistive element (20).

Concerning claims 9 and 10, wherein the first trigger means comprises a voltage trigger element (22) for voltage triggering the first switching means when the voltage on the conductor exceeds the first magnitude (col. 3 lines 27-35). And the current trigger element (20) is operable to generate a trigger signal in dependence on the current flowing through the conductor (14), thereby to trigger conduction of the switching means (10 and 12) in response to the current exceeding a pre-selected value (col. 3 lines 65-70 and col. 4 lines 1-15).

8. Claims 11-17 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Borkowicz (US 4,876,620).

Concerning claims 11, 12-14, 16, 17, 19, 26 and 27, an overvoltage protection circuit (figure 4), the circuit comprising: a first SCR (figure 4; 42/44) having a cathode terminal for connection to a conductor (40), an anode terminal for connection to a reference potential (Gnd), and a first trigger (46a, 46b, 42c, 44c) operable to switch the first SCR from a first, OFF state to a second, ON state (e.g. col. 8 lines 4-15); wherein the first trigger is triggered by voltages exceeding a first magnitude (positive/negative transients) on the conductor and triggered by voltages exceeding a second magnitude (negative/positive) on the conductor, thereby to provide overvoltage protection at two discrete voltage magnitudes (positive and negative; col. 8 lines 10-15). And the current trigger element (figure 4: 46a/46b) is operable to generate a trigger signal in dependence on the current flowing through the conductor, thereby to trigger conduction of the switching means in response to the current exceeding a pre-selected value (col. 7 lines 39-47). Said current trigger element comprises a resistive element (46a/46b). Said current trigger

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element comprises first and second parallel resistive elements (46a/46b). And wherein the first trigger comprises a voltage trigger element (46a/46b) for voltage triggering the first SCR when the voltage on the conductor exceeds said first magnitude (e.g. positive/negative transients).

Concerning claim 15, the first trigger comprises a current trigger element (46a/46b) for current triggering the first switching means when the voltage on the conductor exceeds the second magnitude (col. 7 lines 39-46). And the current trigger element is connected between the gate and the cathode terminal (figure 4).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 7, 18 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Avery (US 4,484,244) in combination with Borkowicz (US 4,876,620).

Concerning claim 7, Avery discloses the claimed invention with regards to claim 1 as stated above except for wherein said current trigger element comprises first and second parallel resistive elements.

Borkowicz teaches parallel coupled resistors for triggering a protection device when excessive voltage flows through a conductor to be protected. The resistors are for sensing an overcurrent flowing therethrough and triggering a thyristor to protect the circuit. The parallel connection protection from either polarity.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide parallel resistors in the circuit of Avery in order to provide for overcurrent sensing and to trigger the protection circuit regardless of the polarity of the voltage s taught by Borkowicz.

Concerning 18, Borkowicz discloses the claimed subject matter as stated above in regards to claim 11 except for wherein said current trigger element is connectable in series with said conductor.

Avery teaches placing the resistor in series with the conductor to be protected in order to sense the current therethrough and provide a trigger signal to a protection circuit to clamp the conductor being protected to ground.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the circuit of Borkowicz to include a resistor connected in series to the conductor being protected in order to sense the current therethrough and provide a trigger signal to a protection circuit to clamp the conductor being protected to ground as taught by Avery.

Concerning 23, Borkowicz discloses the claimed subject matter as stated above in regards to claim 11 except for a diode mean in antiparallel with the anode and cathode.

Avery teaches placing a diode means (figure 2: 22) in antiparallel with the anode and cathode in order to provide a forward bias to the circuit in order to provide a threshold in triggering the protection device.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the circuit of Borkowicz to include a diode means in antiparallel with a diode mean in antiparallel with the anode and cathode.

Allowable Subject Matter

11. Claims 20-22, 24 and 25 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

Concerning claims 20 and 22, the first SCR comprises a first npn transistor device and a second pnp transistor device; each transistor device has its base electrically connected to the collector of the other device; the emitter of each device is electrically connected to a respective one of the anode and cathode terminals; the base of one of the devices is electrically connected to the gate of the SCR; the voltage trigger element is a zener diode means which is electrically connected across the bases of the devices; and said zener diode means has a pre-selected reverse breakdown voltage to trigger conduction of said first SCR in response to the voltage on the conductor exceeding said first magnitude.

Concerning claim 21, the voltage trigger element is a transistor device connected between said gate and said anode terminal and the base of the transistor device is connected to a pre-selected reference voltage at said first magnitude.

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Concerning claim 24, a second SCR connected in antiparallel to the first SCR; and second trigger; wherein: the first trigger is voltage triggered by voltages exceeding the first magnitude of a first polarity and the second trigger is voltage triggered by voltages exceeding the first magnitude of the reverse polarity.

Concerning claim 25, a first trigger is voltage-triggered by voltages of a first polarity exceeding a first magnitude on the conductor and current-triggered by voltages of a first polarity exceeding a second magnitude on the conductor; and the second trigger is voltage-triggered by voltages of the reverse polarity exceeding the first magnitude on said conductor and current-triggered by voltages of said reverse polarity exceeding the second magnitude on the conductor; thereby to provide overvoltage protection at two discrete voltage magnitudes of both polarities.

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13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gary L. Laxton whose telephone number is (703) 305-7039. The examiner can normally be reached on Monday thru Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (703)308-1680. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 305-7724 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'Michael Sherry', with the date '6/30/03' written below it.

**MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800**

GLL
June 28, 2003